



EXPEDITED PROCEDURE – EXAMINING GROUP 2878

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: Roland A. Wood Examiner: Otilia Gabor
Serial No.: 09/893,066 Group Art Unit: 2878
Filed: June 27, 2001 Docket No.: H0001858 (256.112US1)
Title: SENSOR FOR DUAL WAVELENGTH BANDS

APPELLANT'S REPLY BRIEF UNDER 37 C.F.R. § 41.41

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This Reply is presented in response to the Examiner's Answer, dated October 4, 2004, which was sent in answer to Appellant's Brief on Appeal, filed on August 4, 2004. Appellant's Brief on Appeal was filed in response to the rejection of claims 1-19 of the above-identified application.

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REPLY

The Examiner's Answer Brief, ("Answer") dated October 4, 2004, includes substantially identical grounds for rejection as the last Final Office Action. Appellant respectfully maintains that the Appeal Brief, which is hereby incorporated by reference and reasserted in response, overcomes these grounds of rejections. As such, this Reply Brief includes additional comments in reply to the "Summary of Invention" section on page 2, the "Issues" section beginning on page 2, and the "Response to Argument" section beginning on page 7 of the Answer.

Summary of Invention

The Answer states that the Summary of Invention section of Appellant's Brief on Appeal is confusing because it leads one to believe there are two independent and separate pixel array levels. Instead, the Answer asserts, the dual wavelength focal plane has one array of pixels where each pixel is composed of a vertical stacking of an infrared sending element and a visible light sensing element.

Appellant respectfully traverses the assertion that the Summary of Invention section is deficient. To the contrary of the assertion in the Answer, the present inventive subject matter comprises two arrays of sensing elements, one array including a microbolometer 135 sensitive to infrared (IR) wavelengths and the other array including at least one visible light photosensor, such as photosensors 10, 125, and 130.

The partial cutaway block representation 210 of FIG. 2 comprises focal planes 110 as illustrated in FIG. 1. In this illustrated embodiment, the focal planes 110, or pixels, comprise an infrared-sensitive pixel element 135 and a plurality of visible-light photosensor elements 120, 125, and 130. When pixels are formed in the same substrate, as shown in the cutaway block representation 210, the pixels form a pixel array. These pixels each include an infrared-sensitive pixel element and thus, the array of pixels, shown in the cutaway block representation 210, also forms a first array of infrared-sensing pixel elements. Further, each pixel in the array of pixels includes at least one visible light photosensor element, such as photosensor elements 120, 125, and 130. These photosensor elements in the pixel array form a second array of visible light pixel elements as described and claimed. The first array of infrared-sensing pixel elements and the

second array of visible light photosensors are contained within an array of pixels, but each of the first and second arrays are present in the inventive subject matter.

Appellant respectfully submits that the Summary of the Invention is not deficient. In the alternative, Appellant respectfully requests the above explanation be considered as part of the Summary of the Invention.

Issues

Appellant acknowledges Kern et al. (U.S. Patent No. 4,296,324) as a reference of record and the arguments of record address this reference. Appellant respectfully submits that the inclusion of the Kern reference within a statement of the Issues Presented for Review does not alter the arguments previously submitted. Thus, in view of the request in the Answer, Appellant respectfully requests that the Issue Presented for Review be as follows:

Whether claims 1-19 are patentable under 35 USC § 103(a) over Cooper (U.S. Patent No. 5,150,930) in view of Ouvrier-Buffet et al. (U.S. Patent No. 6,320,189) and in further view of Kern et al. (U.S. Patent No. 4,296,324).

Response to Argument

Claims 1-13 and 15-19

Appellant reiterates the previous arguments with regard to claims 1-13 and 15-19 that the claims are patentable over the combination of Cooper in view of Ouvrier-Buffet et al. Further, Appellant respectfully traverses the argument that claims 1-7 include only a single array because the arguments fail to acknowledge all of the claim limitations. For example, the Answer fails to acknowledge the first array of infrared sensing microbolometer pixel elements and the second array of visible light pixel elements.

The Answer on page 8 asserts that “interpreting the claims only as claimed, we arrive at a focal plane that has one or more IR pixels and one or more visible light pixels positioned either linearly or in a matrix.” The interpretation of the Answer includes only a single array with the infrared and visible light pixel elements intermingled. However, this interpretation of claim 1 fails to acknowledge that the infrared sensing microbolometer pixel elements are in a first array and the visible light pixel elements are in a second array. Thus, claim 1 includes two arrays.

The Answer on page 8 further asserts:

"The Applicant . . . misconstrues the claim because, the claim as supported by the disclosure merely discloses a dual wavelength focal plane comprised of an array 210 (underlined for emphasis only) with a plurality of pixels, where each of the pixels comprises a stacking of an IR sensing element and a visible light sensing element. Thus, in effect the claimed dual wavelength focal plane has an array with a plurality of IR and visible light sensing elements positioned in a stacked configuration, but it does not have, as Applicant claims, two independent and separate pixel layers."

However, the Answer does not acknowledge that the partial cutaway block representation 210 (which the Answer refers to as array 210) comprises focal planes 110 as illustrated in FIG. 1.

These focal planes 110, or pixels, comprise an infrared-sensitive pixel element 135 and a plurality of visible-light photosensor elements 120, 125, and 130. (Note: This embodiment includes three visible light photosensors. Other embodiments as disclosed and claimed can include one or more visible light photosensors). When pixels are formed in the same substrate, as shown in the cutaway block representation 210, the pixels form an array. These pixels each include an infrared-sensitive pixel element and thus, the array of pixels, shown in the cutaway block representation 210, also forms a first array of infrared-sensing pixel elements as claimed. Further, each pixel in the array of pixels includes at least one photosensor element, such as photosensor elements 120, 125, and 130. These photosensor elements in the pixel array form a second array of visible light pixel elements as described and claimed.

Thus, claim 1 comprises the two arrays as claimed. Appellant respectfully requests that the two arrays be fully considered and be accorded patentable weight upon review by the Board.

With regard to the argument in the Answer concerning "alternative structure employed by the Applicant . . . not requiring the same parts as the system of Cooper," Appellant reiterates the arguments made in the Appeal Brief. In particular, Appellant emphasizes that the structural differences between the present invention and Cooper are not superficial. The longer wavelengths detected by the present invention described by Appellant are typically emitted by objects to be detected. In contrast, to obtain the short wavelengths in the infrared spectrum, Cooper uses an IR illuminator 26. Col. 3, lines 6-23. This alternative structure employed by Appellant does not require the same parts as the system of Cooper, and in fact uses different parts as evidenced by the long-wavelength IR detector (i.e, microbolometer). Further, the

present invention does not require the IR illuminator 26 of Cooper for the present invention to be functional. The microbolometers of the present invention detect long-wavelength, thermally-emitted IR radiation instead of the short-wavelength IR radiation emitted by the IR illuminator 26 of Cooper. Thus, the structural differences are non-trivial and the present invention as claimed operates in a different manner with different “parts” than Cooper.

Appellant respectfully disagrees with the assertion on page 9 of the Answer that Cooper does not teach away from the proposed combination of Cooper, Ouvrier-Buffet, and Kern et al. Appellant further disagrees with the assertion that Cooper does not require short wavelength detection but merely states that it is more cost effective to use one. Again Appellant directs the Board's attention to Cooper at Col. 1, lines 36-39. This portion of Cooper provides, “[E]ven if a long wavelength infrared camera and display system were available at a reasonable cost, it would not provide critical information needed by a motor vehicle operator.” This statement in Cooper expressly discourages one of skill in the art from using a long wavelength infrared camera and display system as described and claimed.

Appellant respectfully traverses the statement on page 10 that the portion of claim 1 reciting, “traffic colors are optimally sensed,” has no patentable weight. This is functional language which must be accorded patentable weight under M.P.E.P. § 2173.05(g). (citing *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971).

Claim 14

The Answer states, “Since Cooper wants to improve on detecting the colors that one sees while driving, and allows for use of any visible light filters, it is certainly within the skill of an ordinary person in the art to know that detecting amber is better than detecting blue when it comes to traffic lights.” Appellant reiterates the arguments made in the Appeal Brief with regard to the rejection of claim 14. Appellant further traverses this rejection because not all of the claimed elements are found in the cited references. Since all the elements of the claim are not found in the reference, Appellant assumes that the Examiner is taking official notice of the missing elements. Appellant respectfully objects to the taking of official notice and pursuant to M.P.E.P. § 2144.03, Appellant respectfully traverses the assertion of Official Notice and requests that the Examiner cite references in support of this position.

CONCLUSION

The pending claims subject to this appeal are believed patentable. Appellant respectfully submits the claims are in condition for allowance and requests the Board issue an order to withdraw the rejections of claims 1-19.

Respectfully submitted,

ROLAND A. WOOD

By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6972

Date 12-1-2004

By 

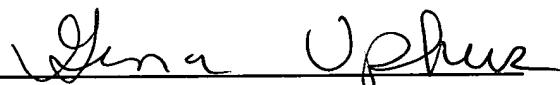
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 Appellant's Reply Brief under 37 C.F.R. 41.41 (6 Pages).

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Gina M. Uphus

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(GENERAL)